# Global Hawk-to-ETP Requirements

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# GH ORD Requirement for ETP

- Ref para 4.1.1.3.2 “The system will be interoperable with appropriate communication standards and directives, including, but not limited to, UHF Demand Assigned Multiple Access/Demand Assigned Access (DAMA/DAASA), CDL and the **Extended Tether Program”** (Threshold Increment 1 (FY05))
- Ref para 4.1.1.3.2: “The communications architecture will take maximum advantage of emerging SATCOM (MILSATCOM preferred) as put forth in the emerging Transformational Communications System” (Threshold Increment 1 (FY05))
- Ref para 4.1.1.3.2: “The aircraft’s airborne satellite terminal must be capable of utilizing the commercial and military application segments of the Ku/Ka/future bands (multi-band terminal)” (Threshold, Future Increments)

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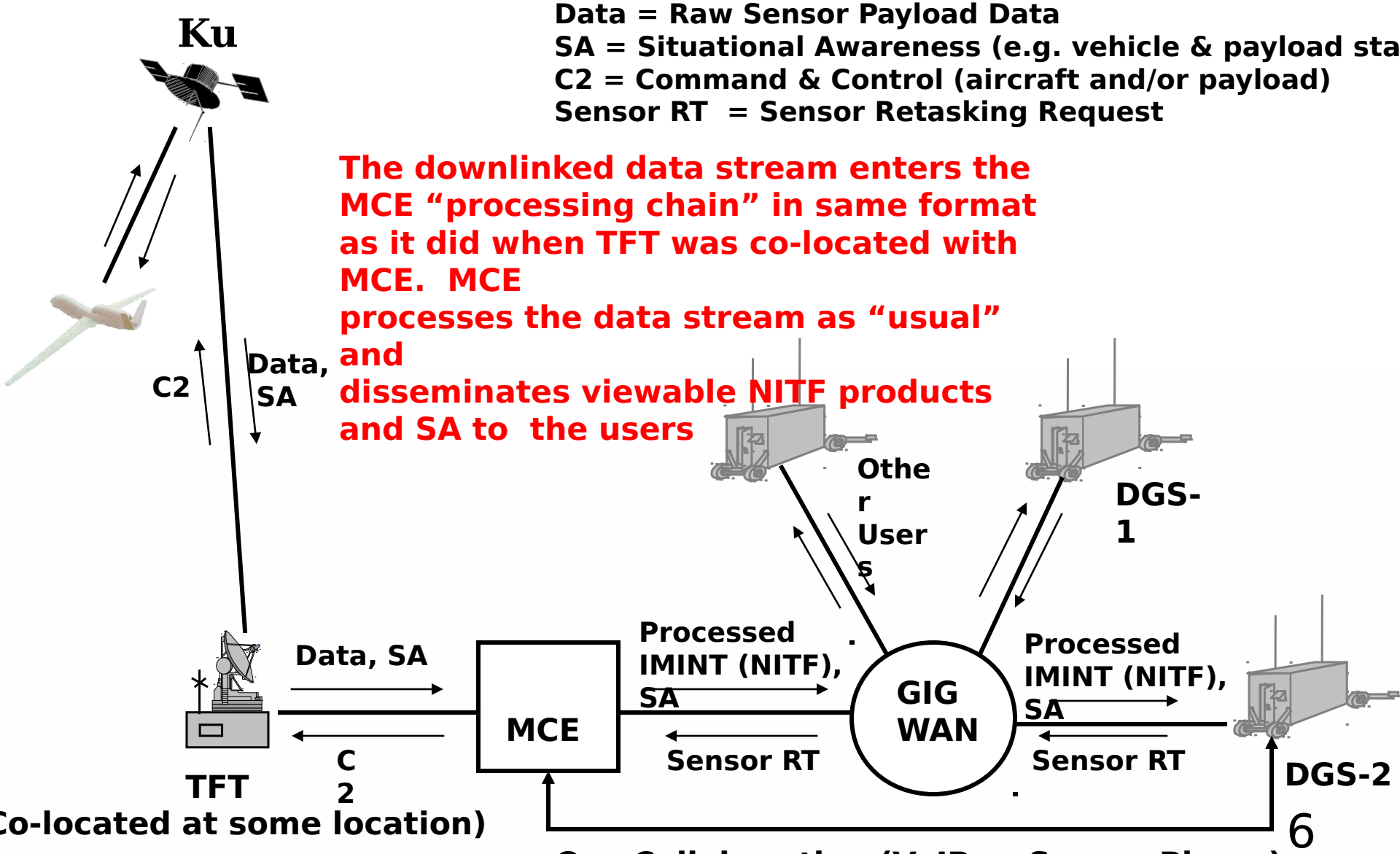
# MCE Requirements Analysis

# Purpose of MCE Requirements Analysis

- **Identify any MCE ORD requirements which could impact GH-to-ETP interface implementation. Sample of GH-to-ETP interface issues:**
  - **Does the MCE require all, some, or none of the GH sensor data collected over ETP?**
  - **Does the MCE require the SA (vehicle and payload health & status) data collected over ETP?**
  - **Does the MCE require the ability to C2 the aircraft and/or payload over ETP?**

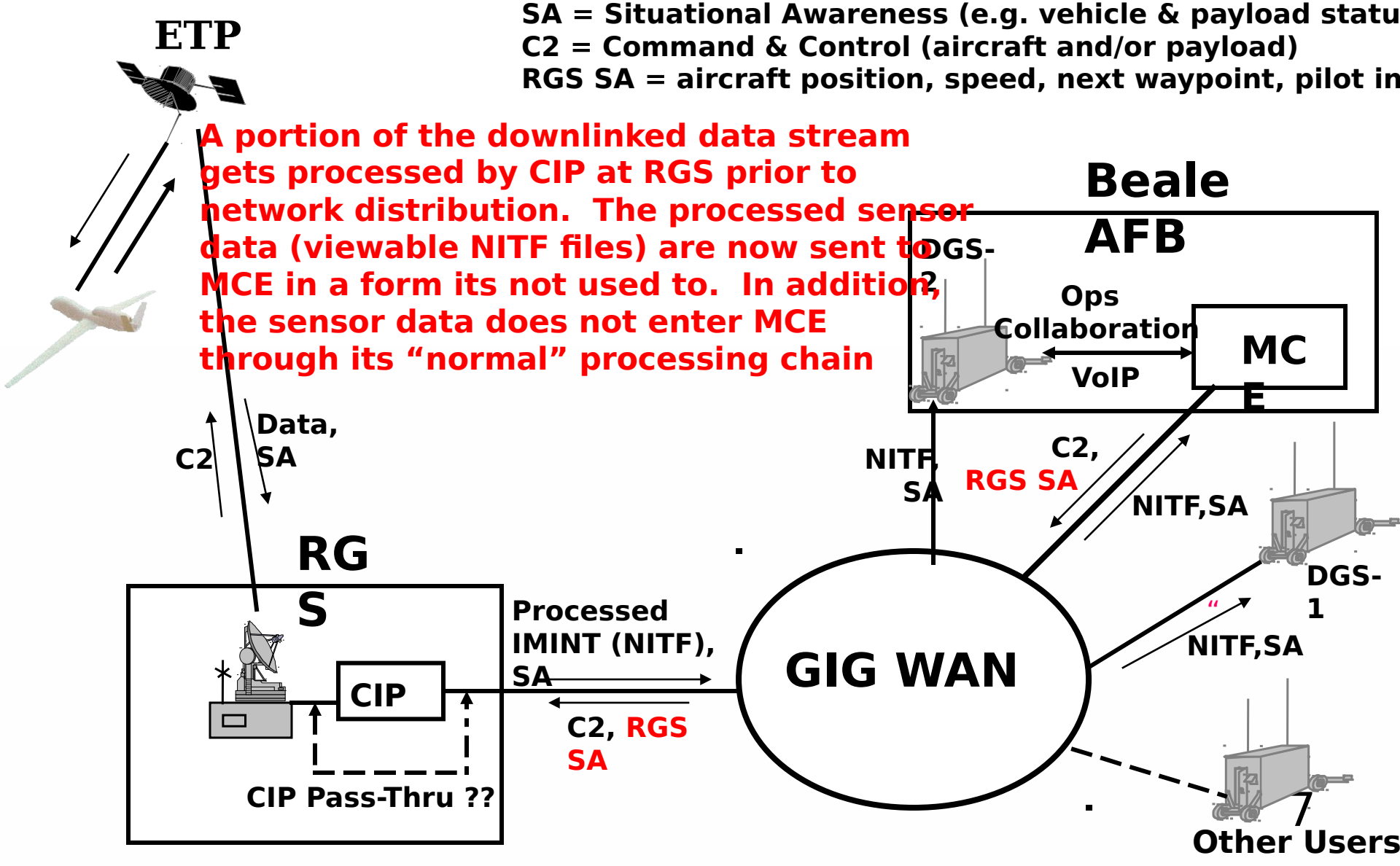
# GH-to-Commercial Ku Functional Flow Reachback Architecture)

Data = Raw Sensor Payload Data
SA = Situational Awareness (e.g. vehicle & payload sta
C2 = Command & Control (aircraft and/or payload)
Sensor RT = Sensor Retasking Request


Ku
C2
Data, SA
The downlinked data stream enters the MCE "processing chain" in same format as it did when TFT was co-located with MCE. MCE processes the data stream as "usual" and disseminates viewable NITF products and SA to the users
Othe r User s
DGS-1
Data, SA
C 2
TFT
MCE
Processed IMINT (NITF), SA
Sensor RT
GIG WAN
Processed IMINT (NITF), SA
Sensor RT
DGS-2
Co-located at some location)
Ops Collaboration (VoIP or Secure Phone)

# GH-to-ETP Functional Flow

Data = Raw Sensor Payload Data
SA = Situational Awareness (e.g. vehicle & payload statu
C2 = Command & Control (aircraft and/or payload)
RGS SA = aircraft position, speed, next waypoint, pilot in


ETP
A portion of the downlinked data stream gets processed by CIP at RGS prior to network distribution. The processed sensor data (viewable NITF files) are now sent to MCE in a form its not used to. In addition, the sensor data does not enter MCE through its "normal" processing chain
Beale AFB
DGS-2
Ops Collaboration
VoIP
MCE
C2
Data, SA
NITF, SA
C2, RGS SA
NITF,SA
DGS-1
NITF,SA
RGS
CIP
CIP Pass-Thru ??
Processed IMINT (NITF), SA
C2, RGS SA
GIG WAN
Other Users

# ORD Requirements that could Impact GH-to-ETP Interface

- Para 4.1.2.3 Mission Execution. "The Global Hawk ground station must allow operators to perform **NRT mission control, mission monitoring**, and **mission updates/modifications to include dynamic platform and payload control and re-tasking"** (Threshold/KPP)
- Para 4.1.2.3 Mission Execution. "The system should have a capability to perform **quality control** on selected payload products" **(Objective)**
- Para 4.1.2 Ground Station. "The ground station must be able to provide **NRT sensor output from at least one (Threshold, Increment 1), three (Objective) aircraft to multi-service exploitation facilities"**
- Para 4.1.2 Ground Station. "The ground station must provide **redundancy for vehicle control**" (Threshold, Increment 1)
- Para 4.1.2.4 Ground Station Communication Subsystems. "**Data may be transmitted directly to an exploitation station, battle management facility or MCE**. **When the data is transmitted to the MCE**, the subsystems must allow the ground station to inject reconnaissance data that is compliant with appropriate standards into compliant multi-service exploitation and battle management facilities" (Threshold, Increment 1)

# MCE ORD Requirement vs. GH-to-ETP Interface Requirement

| ORD Requirement | Provide Receipt of Sensor Data at MCE | Provide Receipt of SA at MCE | Provide C2 from MCE |
|---|---|---|---|
| GS must allow operators to perform NRT mission control, mission monitoring, and mission updates/modifications to include dynamic platform and payload control and re-tasking | Questionable | Supports | Supports |
| Data may be transmitted directly to an exploitation, station, battle management facility or MCE. When the data is transmitted to the MCE, …. | Refutes | NA | NA |
| GS provides NRT sensor output from at least one aircraft to multi-service exploitation facilities | Supports | NA | NA |
| The system has capability to perform quality control on selected payload products (Objective) | Supports as "nice to have" | NA | NA |
| GS to provide redundancy for Vehicle Control | NA | NA | Supports |

# Conclusions

- **Receipt of Sensor Products at MCE**
  - **GH ORD is unclear about requirement for MCE to receive GH sensor data**
- **Receipt of SA at MCE**
  - **MCE requires NRT receipt of all GH SA (aircraft and payload health & status)**
- **C2 of Aircraft and/or payload from MCE**
  - **MCE requires NRT capability to C2 aircraft and/or payload over ETP**

# ACC/DR-GH Informal Guidance Pertaining to ETP

- **"We would like ETP to be implemented just like we did in recent operations reachback (i.e. commercial Ku SATCOM). We want to preserve the same capability we had with our ACTD reachback configuration"**
  - **Above is a non verbatim recollection of statement made by Major Larezos (ACC/DR-GH) in December 03**
  - **GH-to-ETP "Implications" from above "statement"**
    - **MCE receives all GH sensor products during ETP mission**
    - **MCE receives all SA (aircraft and payload health & status)**
    - **MCE has NRT C2 of aircraft and payload**
    - **ALL OF THE ABOVE functionality implemented at MCE in same/similar fashion to Ku SATCOM reachback implementation through MCE's "normal" processing chain**

# Recommendation

- **Establish a “going in position” that all imagery collected via ETP will be sent back to the MCE**
  - **If technical and/or political reasons surface that preclude this objective, then alternatives will be proposed and coordinated with all GH stakeholders**